

Appl. No. 10/765,808
Amdt. Dated 10/02/2009
Response to Office Action of 06/03/2009

Attorney Docket No.: N1085-00256
[TSMC2003-0899]

REMARKS/ARGUMENTS

Claims 1-7, 9-12 and 29-32 were previously pending in the subject patent application and each was rejected.

5 Claims 1, 3, 10-12 and 31-32 are amended herein. Claims 7, 9 and 29-30 are cancelled.

10 Applicants thank Examiner Moore for the opportunity given their undersigned counsel, Mark J. Marcelli, to discuss the claimed invention in a telephonic Examiner interview that took place on September 2, 2009. In the aforementioned Examiner interview, the parties discussed the claim amendments that were filed on July 31, 2009 and the Advisory Action issued by the Examiner on August 11, 2009. Further claim amendments were also discussed because the Examiner was of the opinion, as stated in the Interview Summary mailed September 8, 2009, that the proposed claims as filed on July 31, 2009 would need at least slight revision to bring them in line with the disclosed invention and overcome the teachings of the Lenz reference, see *infra*.

15 Applicants respectfully submit that the present claim amendments reflect language that the Examiner tentatively agreed would overcome the Lenz reference but would be subject to further search.

Applicants respectfully request re-examination, reconsideration and allowance of each of pending claims 1-6, 10-12 and 31-32.

20 I. **Claim Rejections – 35 U.S.C. § 102**

In paragraph 2 of the June 3, 2009 Office Action, claims 1-7 and 29 were rejected under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent No. 5,998,932 to Lenz. Applicants respectfully submit that these claim rejections are overcome for reasons set forth below.

25 Claims 1 stands as the independent claim of the claims rejected under this section, with claim 29 having been cancelled. Claim 1 recites the features of:

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a focus ring maintained at a temperature less than a temperature of said substrate while an etching operation is carried out upon said substrate; and

5 only a single portion of said focus ring extending inwardly past a peripheral edge of said chuck, said single portion extending substantially continuously directly underneath a peripheral portion of said chuck.

As a first matter, the Examiner concedes, in paragraph 13 of the subject Office Action, that "*Lenz fails to teach said focus ring maintainable at a temperature no greater*
10 *than a temperature of said substrate while etching operation is carried out upon said substrate*". Since Lenz does not teach maintaining the temperature at a temperature *no greater* than a temperature of the substrate, Lenz further does not teach the feature of the focus ring maintained at a temperature *less than* the temperature of the substrate while the etching operation is carried out.

15 Independent claim 1 is therefore distinguished from Lenz for at least this reason.

The 102(b) rejection of independent claim 1, and also of claims 2-6, which depend from independent claim 1, should therefore be withdrawn. Claim 7 has been cancelled.

The Ishii reference, see *infra*, also does not teach the feature of the focus ring
20 maintained at a temperature less than the temperature of the substrate during the etching operation. In Ishii, the coolant reservoir 35 or the temperature-adjusting heater 92 is directed to cooling the wafer W by cooling the rest table 3 upon which wafer W lies. Focus ring 6 is also in contact with portions of rest table 3. Ishii, however, does not teach or suggest cooling the focus ring 6 to a cooler temperature than the wafer and
25 it would be speculative to make such an assumption, especially since the focus ring merely rests on the cooled rest table 3. It is **because** of this cooling feature recited in claim 1, that the subject invention provides the advantage of reduced particle contamination because the polymers that are generated during an etching operation, preferably adhere to the cold focus ring as opposed to the wafer.

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Independent claim 1 is therefore distinguished from Lenz in view of Ishii for at least these reasons. Dependent claims 2-6, 10-12 and 31-32 are similarly distinguished because they each ultimately depend from claim 1.

5 Claim 1 also recites the feature that only a single portion of the focus ring extends inwardly past a peripheral edge of the chuck, the single portion extending substantially continuously directly underneath a peripheral portion of the chuck. Lenz does not provide this feature as Lenz includes two portions that extend inwardly past the peripheral edge of the chuck. As shown in FIG. 3, chuck 104 includes a peripheral edge being the portion of chuck 104 that extends furthest to the right hand side of FIG.
10 3. The two portions of Lenz' annular dielectric body that extend inwardly past this peripheral edge, i.e., extend to the left of the peripheral edge as illustrated in FIG. 3, are: a portion of feature 302(a) and a portion of feature 302(b). Claim 1 is therefore further distinguished from Lenz and Applicants thank the Examiner for indicating, in the September 2, 2009 interview, that claim 1 as presently amended is, indeed
15 distinguished from Lenz.

It is worth pointing out that Ishii also does not disclose this feature because none of the focus rings provided in Ishii extend directly underneath a wafer and none of the focus rings in Ishii extend directly underneath the chuck, much less underneath peripheral portions of both the chuck and a wafer.

20 The rejection of claims 1-7 and 29 under 35 U.S.C. § 102(b), should be withdrawn.

II. Claim Rejections – 35 U.S.C. § 103

In paragraph 11 of the June 3, 2009 Office Action, claims 9-12 and 30-32 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Lenz in view of US Pat.
25 No 5,529,657 to Ishii. This rejection is overcome for reasons set forth below.

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Claims 9 and 30 have been cancelled and claims 10-12, 31 and 32 depend from claim 1 which is distinguished from Lenz in view of Ishii, as above.

As above, Ishii fails to teach any focus ring or focus ring portion formed of an oxygen-containing/oxygen impregnated material under a chuck, above which a wafer is disposed. Applicants point out that the inner annular member 6b of Ishii is formed of a conductive material (column 4, lines 53-54) and is not disposed underneath a chuck in FIG. 5. None of the other focus rings taught by Ishii extend under a chuck or a wafer. Ishii therefore does not make up for the acknowledged deficiencies of Lenz.

Because claims 10-12 and 31-32 depend from claim 1 and further because claims 9 and 30 have been cancelled, the rejection of claims 9-12 and 30-32 under 35 U.S.C. § 103, should be withdrawn.

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CONCLUSION

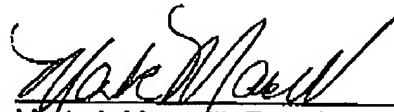
Based on the foregoing, each of pending claims 1-6, 10-12 and 31-32 is in allowable form and the application in condition for allowance, which action is respectfully and expeditiously requested.

5 The Assistant Commissioner for Patents is hereby authorized to charge any fees necessary to give effect to this filing and to credit any excess payment that may be associated with this communication, to Deposit Account 04-1679.

Respectfully submitted,

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Dated: October 2, 2009



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